



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,355	02/13/2004	R. Hugo Patterson	6368P003	7890
8791 7590 01/24/2007 BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			EXAMINER VAUTROT, DENNIS L	
			ART UNIT 2167	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE			MAIL DATE	DELIVERY MODE
3 MONTHS			01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/779,355	<b>Applicant(s)</b> PATTERSON ET AL.	
	<b>Examiner</b> Dennis L. Vautrot	<b>Art Unit</b> 2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The applicants' amendment, filed 24 October 2006, has been received, entered into the record and considered.
2. As a result of the amendment, claim 1 was amended. Claims 1 – 20 are pending in the application.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1 - 20 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hattrup et al.** (US 2004/0243643).

6. Regarding claim 1, **Hattrup et al.** (hereinafter **Hattrup**) teaches a computer implemented method for storing data comprising: storing a composite data stream so that it may be restored (See page 2, paragraph [0019] "In addition, the system and method should backup and restore data, including embedded metadata, without altering the original data."), said storing including,

Decomposing the composite data stream into a plurality of constituent data streams (See page 4, paragraph [0061] "The loader 210 loads autonomous operation instructions corresponding to the data of the data source 202 into a first location 212 and autonomous operation instructions corresponding to the metadata of the metadata source 204 into a second location 214." and see page 9, paragraph [0127] "In addition, the present invention allows for the same formatting rules 408 to divide the combined, formatted data as were used to format the data for the data source 202 originally....");

Segmenting at least one of the plurality of constituent data streams decomposed from the composite data stream. (See page 5, paragraph [0069] "...configured in one embodiment to manage an autonomous third party data transfer by dividing the data object for transfer into smaller segments.")

**Hattrup** does not explicitly disclose discarding those of the segments resulting from said segmenting which are determined to have been stored previously.

However, it would have been obvious to one with ordinary skill in the art at the time of the invention to discard the segments which had been stored previously because as **Hattrup** discloses on page 2, paragraph [0019] "Furthermore, the system and method should minimize wasted storage space on the destination storage device."

Art Unit: 2167

And see page 7, paragraphs 101-102 "...the execution module 604 may check to determine if a cached fragment 518 exists. If so, the execution module 604 may transfer the cached fragment 518 before the subsequent segment 610. The server 102 or any other suitable processor may prepare the segments 610...dynamically in response to successful transfer of previous segments 610."

Because of the motivation to minimize wasted storage space, a person with ordinary skill in the art would have known that segments already stored could be discarded. It is for this reason that one of ordinary skill in the art would have been motivated to include discarding those of the segments resulting from said segmenting which are determined to have been stored previously.

7. Regarding claim 2, **Hattrup** additionally discloses storing a composite data stream map [formatting rules 408] that indicates how to recompose the plurality of constituent data streams into the composite data stream. (See page 7, paragraph [0090] "The formatting rules 408 define the order for pulling data block instructions 406 and the metadata instructions 402, 404 from the first location 212 and the second location 214a, 214b. In the depicted embodiment, the formatting rules 408 indicate that a header instruction 402 (H1) is to be inserted, followed by three data block instructions..." Without using the word "map" it is clear from the disclosure the data rules make up the map for how to recompose the constituent data streams.)

8. Regarding claim 3, **Hattrup** teaches a first of the plurality of constituent data streams is user data and a second of the plurality of constituent data streams is administrative data. (See page 4, paragraph [0057], describing the metadata as including error-checking information and a timestamp, among other things disclosed in the instant application's specification as administrative data, and see page 4, paragraph [0061] describing the user data "...instructions corresponding to the data of the data source 202....")

Regarding claim 4, **Hattrup** teaches said storing further comprises: determining a first of said plurality of constituent data streams is administrative data that may be restored by regeneration rather than being stored; and discarding said first constituent data stream. (See page 4, paragraph [0055] "the initialization module prepares metadata that describes or otherwise corresponds to the data of the data source...Alternatively, the initialization module may determine how to interface with the data source to dynamically generate the metadata as needed." In the specification on page 14, "regenerating" is defined as "determining it on the fly/dynamically" as is being done here.)

9. Regarding claim 5, **Hattrup** teaches the administrative data is tape markers and/or header information, such as time stamps. (See page 4, paragraph [0058] "In a preferred embodiment, the metadata also includes markers for insertion at predetermined positions within the set of data included in the autonomous operation.

Art Unit: 2167

The markers may include by way of example a unique identifier, a timestamp, error checking information...specific to a subset of the data from the data source.”)

10. Regarding claim 6, **Hattrup** teaches the storing comprises segmenting each of the plurality of constituent data streams. (See page 5, paragraph [0069] “...configured in one embodiment to manage an autonomous third party data transfer by dividing the data object for transfer into smaller segments.”);

11. Claims 7 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hattrup** in view of **Muthitacharoen** (Athicha Muthitacharoen, Benjie Chen, and David Mazieres “A Low-bandwidth Network File System”, MIT Laboratory for Computer Science and NYU Department of Computer Science) (hereinafter **Muthiatacharoen**).

12. Regarding claim 7, **Hattrup** teaches a computer implemented method for efficiently storing data comprising: receiving over time a plurality of composite data streams, said plurality of composite data streams representing snapshots of data residing at a set of one or more sources taken over said time (See page 4, paragraph [0061] “The loader 210 loads autonomous operation instructions corresponding to the data of the data source 202 into a first location 212 and autonomous operation instructions corresponding to the metadata of the metadata source 204 into a second location 214.” and see page 9, paragraph [0127] “In addition, the present invention

Art Unit: 2167

allows for the same formatting rules 408 to divide the combined, formatted data as were used to format the data for the data source 202 originally....");

and storing each of said plurality of composite data streams so that it may be restored (See page 2, paragraph [0019] "In addition, the system and method should backup and restore data, including embedded metadata, without altering the original data."),

said storing including, decomposing the composite data stream into a plurality of constituent data streams (See page 4, paragraph [0061] "The loader 210 loads autonomous operation instructions corresponding to the data of the data source 202 into a first location 212 and autonomous operation instructions corresponding to the metadata of the metadata source 204 into a second location 214." and see page 9, paragraph [0127] "In addition, the present invention allows for the same formatting rules 408 to divide the combined, formatted data as were used to format the data for the data source 202 originally....");

segmenting the constituent data stream (See page 5, paragraph [0069] "...configured in one embodiment to manage an autonomous third party data transfer by dividing the data object for transfer into smaller segments.");

and storing only those segments of the constituent data stream that cannot be restored using segments already stored as a result of storing a previous one of said plurality of composite data streams. (See page 2, paragraph [0019] "Furthermore, the system and method should minimize wasted storage space on the destination storage device." And see page 7, paragraphs 101-102 "...the execution module 604 may check



Art Unit: 2167

to determine if a cached fragment 518 exists. If so, the execution module 604 may transfer the cached fragment 518 before the subsequent segment 610. The server 102 or any other suitable processor may prepare the segments 610...dynamically in response to successful transfer of previous segments 610.”)

**Hattrup** does not explicitly disclose storing using segment reuse a set of one or more of said plurality of constituent data streams, said storing using segment reuse including performing the following for each of said constituent data streams,

However **Muthitacharoen** teaches storing using segment reuse a set of one or more of said plurality of constituent data streams, said storing using segment reuse including performing the following for each of said constituent data streams, (See page 13, second column (“LBFS breaks files into chunks based on contents, using the value of a hash function on small regions of the file to determine chunk boundaries. It indexes file chunks by their has values, and subsequently looks up chunks to reconstruct files that contain the same data without sending that data over the network.”))

It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of **Hattrup** with the segment reuse teachings of **Muthitacharoen** because both of the references state a common goal is to minimize resources such as memory and processor cycles dealing with data transfer and use segmenting as one way of accomplishing their tasks, and by including the segment reuse teachings of **Muthitacharoen**, the efficiency and storage space saving benefits that are provided by using segment reuse are able to enhance the efficiency of the method of **Hattrup**. It is for this reason that one of ordinary skill in the art would have

Art Unit: 2167

been motivated to include storing using segment reuse a set of one or more of said plurality of constituent data streams, said storing using segment reuse including performing the following for each of said constituent data streams.

13. Regarding claim 8, the combination of **Hattrup** and **Muthitacharoen** additionally discloses storing a composite data stream map [formatting rules 408] that indicates how to recompose the plurality of constituent data streams into the composite data stream. (See **Hattrup** page 7, paragraph [0090] "The formatting rules 408 define the order for pulling data block instructions 406 and the metadata instructions 402, 404 from the first location 212 and the second location 214a, 214b. In the depicted embodiment, the formatting rules 408 indicate that a header instruction 402 (H1) is to be inserted, followed by three data block instructions..." Without using the word "map" it is clear from the disclosure the data rules make up the map for how to recompose the constituent data streams.)

14. Regarding claims 9, the combination of **Hattrup** and **Muthitacharoen** additionally discloses a first of the plurality of constituent data streams is user data and a second of the plurality of constituent data streams is administrative data. (See **Hattrup** page 4, paragraph [0057], describing the metadata as including error-checking information and a timestamp, among other things disclosed in the instant application's specification as administrative data, and see **Hattrup** page 4, paragraph [0061]

Art Unit: 2167

describing the user data "...instructions corresponding to the data of the data source 202....")

15. Regarding claim 10, the combination of **Hattrup** and **Muthitacharoen** additionally discloses said storing further comprises: determining a first of said plurality of constituent data streams is administrative data that may be restored by regeneration rather than being stored; and discarding said first constituent data stream. (See **Hattrup** page 4, paragraph [0055] "the initialization module prepares metadata that describes or otherwise corresponds to the data of the data source...Alternatively, the initialization module may determine how to interface with the data source to dynamically generate the metadata as needed." In the specification on page 14, "regenerating" is defined as "determining it on the fly/dynamically" as is being done here.)

16. Regarding claim 11, the combination of **Hattrup** and **Muthitacharoen** additionally discloses the administrative data is tape markers and/or header information, such as time stamps. (See **Hattrup** page 4, paragraph [0058] "In a preferred embodiment, the metadata also includes markers for insertion at predetermined positions within the set of data included in the autonomous operation. The markers may include by way of example a unique identifier, a timestamp, error checking information...specific to a subset of the data from the data source.")

17. Regarding claim 12, the combination of **Hattrup** and **Muthitacharoen** additionally teaches a computer implemented method for storing data comprising: storing a composite data stream so that it may be restored (See **Hattrup**, page 2, paragraph [0019] "In addition, the system and method should backup and restore data, including embedded metadata, without altering the original data."),

said storing including, decomposing the composite data stream into a plurality of constituent data streams (See **Hattrup**, page 4, paragraph [0061] "The loader 210 loads autonomous operation instructions corresponding to the data of the data source 202 into a first location 212 and autonomous operation instructions corresponding to the metadata of the metadata source 204 into a second location 214." and see **Hattrup**, page 9, paragraph [0127] "In addition, the present invention allows for the same formatting rules 408 to divide the combined, formatted data as were used to format the data for the data source 202 originally....");

backing up each of said plurality of constituent data streams separately, (See **Hattrup** page 1, paragraph [0013] "Because the users often desire privacy and security for the data, it is desirable that any backup operations that insert metadata into a user's data stream also remove the metadata and restore the data to its original form. In this manner, the user can be confident that the data is secure and the privacy is preserved.")

applying segment reuse to back up a first set of one or more of said plurality of constituent data streams. (See **Muthitacharoen**, page 13, second column ("LBFS breaks files into chunks based on contents, using the value of a hash function on small

regions of the file to determine chunk boundaries. It indexes file chunks by their hash values, and subsequently looks up chunks to reconstruct files that contain the same data without sending that data over the network.”)

18. Regarding claim 13, the combination of **Hattrup** and **Muthitacharoen** additionally discloses storing a composite data stream map [formatting rules 408] that indicates how to recombine the plurality of constituent data streams into the composite data stream. (See **Hattrup**, page 7, paragraph [0090] “The formatting rules 408 define the order for pulling data block instructions 406 and the metadata instructions 402, 404 from the first location 212 and the second location 214a, 214b. In the depicted embodiment, the formatting rules 408 indicate that a header instruction 402 (H1) is to be inserted, followed by three data block instructions...” Without using the word “map” it is clear from the disclosure the data rules make up the map for how to recombine the constituent data streams.)

19. Regarding claim 14, the combination of **Hattrup** and **Muthitacharoen** additionally teaches discarding a second set of one or more of said plurality of constituent data streams because they are administrative data that may be restored using regeneration as opposed to storage. (See **Hattrup**, page 4, paragraph [0055] “the initialization module prepares metadata that describes or otherwise corresponds to the data of the data source...Alternatively, the initialization module may determine how to interface with the data source to dynamically generate the metadata as needed.” In

the specification on page 14, "regenerating" is defined as "determining it on the fly/dynamically" as is being done here. In this case, the admin data of the constituent data stream is not stored because it is created dynamically.)

20. Claims 15 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hattrup** in view of **Muthitacharoen**.

21. Regarding claim 15, **Hattrup** teaches an apparatus to back up data comprising: an interface agent to receive over time composite data streams representing snapshots of data residing at a set of one or more sources (See page 4, paragraph [0061] "The loader 210 loads autonomous operation instructions corresponding to the data of the data source 202 into a first location 212 and autonomous operation instructions corresponding to the metadata of the metadata source 204 into a second location 214." and see page 9, paragraph [0127] "In addition, the present invention allows for the same formatting rules 408 to divide the combined, formatted data as were used to format the data for the data source 202 originally....");

a composite data stream decomposer/recomposer, coupled to said interface agent, to decompose [divide] composite data streams [combined, formatted data] into their constituent data streams (See page 9, paragraph [0127] "In addition, the present invention allows for the same formatting rules 408 to divide the combined, formatted data as were used to format the data for the data source 202 originally."), and to recompose composite data streams from their constituent data streams (See page 9,

paragraph [0126] FIG. 13 illustrates a block diagram of one manner in which the ...apparatus of the present invention may be used to restore data and validate metadata inserted within the data stream under the present invention.”)

Hattrup does not explicitly disclose a segment reuse storage system, coupled to said composite data stream decomposer/recomposer, to store and restore constituent data streams.

However, **Muthitacharoen** teaches a segment reuse storage system, coupled to said composite data stream decomposer/recomposer, to store and restore constituent data streams. (See page 13, second column (“LBFS breaks files into chunks based on contents, using the value of a hash function on small regions of the file to determine chunk boundaries. It indexes file chunks by their has values, and subsequently looks up chunks to reconstruct files that contain the same data without sending that data over the network.”))

It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of **Hattrup** with the segment reuse teachings of **Muthitacharoen** because both of the references state a common goal is to minimize resources such as memory and processor cycles dealing with data transfer and use segmenting as one way of accomplishing their tasks, and by including the segment reuse teachings of **Muthitacharoen**, the efficiency and storage space saving benefits that are provided by using segment reuse are able to enhance the efficiency of the method of **Hattrup**. It is for this reason that one of ordinary skill in the art would have

been motivated to include a segment reuse storage system, coupled to said composite data stream decomposer/recomposer, to store and restore constituent data streams.

22. Regarding claim 16, the combination of **Hattrup** and **Muthitachaoen** discloses a map file storage, coupled to said composite data stream decomposer/recomposer, to store data indicating how to recombine the plurality of constituent data streams into the composite data stream. (See **Hattrup**, page 7, paragraph [0090] "The formatting rules 408 define the order for pulling data block instructions 406 and the metadata instructions 402, 404 from the first location 212 and the second location 214a, 214b. In the depicted embodiment, the formatting rules 408 indicate that a header instruction 402 (H1) is to be inserted, followed by three data block instructions..." Without using the word "map" it is clear from the disclosure the data rules make up the map for how to recombine the constituent data streams.)

23. Regarding claim 17, the combination of **Hattrup** and **Muthitachaoen** additionally teaches an administrative data regenerator, coupled to said composite data stream decomposer/recomposer, to regenerate data from constituent data streams that was not stored because that data could be restored by regeneration (See **Hattrup**, page 4, paragraph [0055] "the initialization module prepares metadata that describes or otherwise corresponds to the data of the data source...Alternatively, the initialization module may determine how to interface with the data source to dynamically generate



the metadata as needed.” In the specification on page 14, “regenerating” is defined as “determining it on the fly/dynamically” as is being done here.)

24. Regarding claim 18, the combination of **Hattrup** and **Muthitacharoen** additionally teaches the administrative data is regenerated in accordance with composite data stream attribute data retrieved from a configuration file (See **Hattrup** page 4, paragraph [0055] “Specifically, the initialization module preferable identifies the metadata source which may be data stored in memory or on a storage medium.”)

25. Regarding claim 19, the combination of **Hattrup** and **Muthitacharoen** additionally teaches the composite data stream decomposer/recomposer is a machine-readable medium having stored thereon a set of instructions, which, when executed by a set of one or more processors, cause the operations of the composite data stream decomposer/recomposer to be performed. (see **Hattrup**, page 11, claim 26)

26. Regarding claim 20, the combination of **Hattrup** and **Muthitacharoen** additionally teaches the composite data stream decomposer/recomposer is an application specific integrated circuit. (See **Hattrup** page 3, paragraph [0045] “For example, a module may be implemented as a hardware circuit comprising custom VLSI circuits or gate arrays, off-the-shelf semiconductors such as logic chips, transistors, or other discrete components.”)

***Conclusion***

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

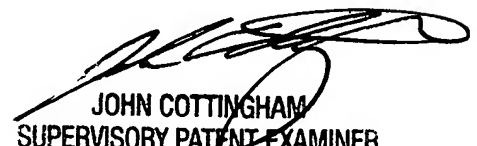
**Zhu et al.** (6,928,526) teaches similar receiving data and dividing it into segments as well as including in the administrative data a timestamp.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis L. Vautrot whose telephone number is 571-272-2184. The examiner can normally be reached on Monday-Friday 9:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dv  
14 January 2007

  
JOHN COTTINGHAM  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100

*W.S. Lu*